Regional Innovation System and Regional Development : Survey and a Korean case

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Abstract

Regional Innovation System(RIS) is a new model for regional development and it could be a new means for a balanced economic development in a nation. This paper investigates the concept, definition and development process of RIS and the application of RIS in Korea. Characteristics of RIS are introduced, mainly based on existing studies. The application cases in Europe, US and Japan are discussed and in Korea and Busan as well. Discussion in policies for RIS in various countries and cases follows next.

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Ⅰ. Introduction

Regional Innovation System (hereafter, RIS) has now become a hot issue. It is an outgrowth of the models that have been used so far to study regional growth.[2] Therefore there may be nothing new in it. From another point of view, it is quite a new model, because it emphasizes a system instead of individual actors. The model focuses on network and linkage effects in a region instead of the role of independent activities.

This paper tries to address the following nine questions: ① Why RIS? How is it different from National Innovation Systems (hereafter, NIS)? ② Is RIS a new concept and a new model? ③ Do regions matter? Does proximity matter? ④ What is the proper unit of analysis for innovation systems? ⑤ What have the regions in the world experienced so far? ⑥ What are the necessary and sufficient conditions for successful RIS? ⑦ What kind of policies can be considered and suggested? ⑧ What individual countries and regions are suggested to do for RIS? ⑨ What kind of model could be set for Korean regions?

The paper briefly reviews the evolution of the concept of RIS and its application in various regions. It then discusses the definition and role of RIS for regional development. Since RIS is a network concept, issues related to networking are also raised. The paper investigates RIS in foreign countries and Korea. Finally the paper suggests a Korean (Busan) RIS model.

Ⅱ. Evolution of the RIS

Economic development can be understood as a process of innovation activities by individual firms. In the production function, where technology, instead of quantitative inputs, is emphasized, innovation emerges as the engine of growth. The national innovation system became an important part of national industrial policies (Lundvall 1992).

In the meantime, the concept of regional innovation system has emerged. One interesting finding in the recent period has been that the innovation process in general, as well in particular industries, tends to be highly localized (Enright 2002). That is, informal, unplanned, face to face, oral communications

[2] For more discussions on regional growth and innovation system, see De Bresson and Hu (1999).

are critical to the innovation process (Utterback 1974).

RIS is considered to be an instrument for regional development policy in Europe (Cooke et al, 2000). For example, the European Union adopted a Socio-Economic Research Program entitled, "Regional Innovation Systems: Designing for the Future (REGIS)," for the less developed regions in Europe. Highlights of the European experience can be seen in Braczyk et al. (2002) and will also be discussed in this paper later. One of the distinctive examples of RIS is industrial clustering or regional clustering. In some parts of world, such as the U.S. and Japan, the term "cluster" is more popular than RIS. Following the initiative of Porter (1998), policy makers in the U.S. use the concept of clustering for all kinds of industries and for regional development (Council on Competitiveness 2001). Similarly, the expression RIS is not frequently used in Japan. Instead industrial clustering is adopted as a Japanese national policy (Ishikura, et. al. 2003). Japan seems to rely on the success of newly designated industrial clusters for regional development.

OECD published two comprehensive reports: Phase 1 (1997~99 Boosting Innovation: The Cluster Approach) and Phase 2 (1999~2001 Innovative Clusters: Drivers of National Innovational System). Even though OECD deals with clusters from the view point of national innovation system, industrial clusters in each region are closely related to RIS.

In Korea, the concept of RIS is rather new. The concept of industrial cluster has been used for quite a long time since the establishment of Daeduk Science Park and other techno parks that followed. The concept of RIS was adopted as a national agenda for a balanced regional development by the Noh government in 2003. Some research has been done on RIS recently, but most of the studies have limited themselves to introducing cases from other countries. Reports on Korean techno parks can be found in Kwon et al. (2003). However, not enough research on RIS has yet been done in Korea.

This paper will address the questions listed above, though not necessarily in the order they appear in the list. The discussion of the paper is focused on RIS rather than on industrial or regional clustering. A new industrial cluster is suggested for Busan-Gyeongnam-Ulsan Area as an example of RIS in Southeast Korea.

Ⅲ. Regional Innovation System and Regional Development

1. Theoretical Background

Currently, RIS is most frequently mentioned as a means of regional development. It is a kind of regional policy (Cooke, 2000). In the following, we try to explain the theoretical background of RIS.

First, a new economy based on IT revolution has evolved. That means that the epicenter of knowledge base has shifted to regions. Second, endogenous growth for regional development has received emphasis in the recent period. Interaction inside a region has become more important for growth in a region than exogenous factors from outside. From the standpoint of regional policy, clustering and innovations are the engine of growth and these have been used in various regions of the world.

2. Changed and Changing Conditions of Regions

The conditions of regions have also changed remarkably over the period. Most regions require changes in industrial structure. Many competitive regions in the world have undergone industrial restructuring to correspond to the emerging global value chain (Gereffi 1999, Schmitz 2004). The regional governance system has also been changing toward more networking structure and away from hierarchical structures.

Globalization means diminishing importance of national borders. This agrees with Tofler's (1990) concept of power shift. In this situation, regions become more responsible for their own development strategies. In addition, culture has come to play a more important role in the development process. However, culture essentially belongs to a region instead of a nation.

3. Demand for a New Paradigm for Regional Development

There are several factors demanding a new paradigm for regional development that is different from the traditional approaches. Among these, the following may be mentioned. ① Decentralization of power and resources have tended to facilitate deteritorialization. ② A limitation of historical regional development policy was perceived. ③ The development gap between growing regions and lagging regions widened. ④ Self-generated regional policies by regional and local government (a shift from NIS) started to play a more important role. ⑤ Growth without employment at the national level created a

necessity for initiatives at the regional level.

4. Re-evaluation of Innovation

According to the Schumpeterian concept, innovation is the engine of growth for individual firms, regions and nations. We can see innovation as a means of competitiveness for firms, as a means of development for regions, and as a means of growth for nations. As Schumpeter suggested, the principle is the same. However, as the saying goes, "Nothing is new under the sun." (Ecclesiastes, Bible) In this sense, RIS is not a new model. However, it is different in the sense that it puts more emphasis on networking among regional actors.

Ⅳ. RIS : Definitions, Characteristics and Contents

In this section, we first discuss definition and characteristics of RIS and then examine many issues related to the system individually.

1. Definitions of RIS

RIS can be defined as a system stimulating innovation capabilities of firms in a region so as to enhance the region's growth potential and regional competitiveness. Interaction is a social process involving feedback at different stages of knowledge development, diffusion and deployment to stimulate innovation in a region (Cooke et al. 1998). There may be other definitions of RIS. However, they all represent combination of the concepts of region, innovation and system, and hence are not much different than the one presented above.

Region is a concept with widely different interpretations. It could be a global region (e.g. Northeast Asia), supranational (EC), central (e.g. Singapore), regional (e.g. Wales) and local. In the studies of RIS, region generally means local and regional unit. In Korea, the metropolitan city and provinces are regional units and cities, and Gu and Gun are local units in general.

RIS is generally contrasted with National Innovation System and Global Innovation System (hereafter, GIS). The actors of each system and the relation among them are summarized in Figure 1.

Figure 1: GIS, NIS and RIS

2. NIS and RIS

Historically, in the first stage of economic development, NIS was more effective in making use of scarce resources intensively. For example, the public education system at the turn of the 20thcentury made US and Germany to surpass UK and France. The Korean education system was one of the most important factors for rapid economic development in Korea in the 20th century. The economic development planning by the central government was another engine of Korean economic growth in the second half of the 20th century.

While industry and science and technology policies were working for NIS, two things were observed. First, NIS does not necessarily achieve a balanced regional development. Second, regions matter for the implementation of NIS. RIS therefore emerged as a new concept and a new policy for regional growth.
Table1 compares the characteristics between NIS and RIS. Even though it is not comprehensive, the Table helps to understand the two systems.

Table 1: Systems of innovation-Summary Table

	National systems of innovation	*Regional systems of innovation*
Elements of the system	*Mass production economy* *Process innovation*	*Knowledge economy* *Product innovation*
Inter-firm relationships	Market Authoritarian relationships Emphasis on competition Arm's length supplier relationships	Network economics Clusters Supplier chains as source of innovation Co-operation and trust
The knowledge infrastructure	Formal R&D laboratories Focus on process R&D Federal R&D laboratories Focus on defense	University research Focus new product R&D External sources of knowledge Local R&D spillovers
Community and the public sector	Emphasis on federal level Paternalistic relationship Regulation	Emphasis on regional level Public private partnerships Community, co-operation and trust
Internal organization of the firm	Mechanistic and authoritarian Separation of innovation and production Multi-divisional firm Hierarchical	Organic organization Continuous innovation Matrix organization
Institutions of the financial sector	Formal savings and investment Formal financial sector	Venture capital Informal financial sector
Physical and communication infrastructure	National orientation Physical infrastructure	Global orientation Electronic data exchange
Firm strategy, structure and rivalry	Difficult to start new firms No access to new knowledge Little or no entrepreneurship	Easy to start new firms Inexpensive access to knowledge Entrepreneurship is crucial

Source: Acs (2002)

3. Networking (Inter-firm relations)

Networking is the most important element of RIS. It means voluntary adherence to norms based on reciprocity and trust as seen in the Silicon Valley case. It is distributed, centralized, collaborative and adaptive (Kelly, 1998). It is a new form of externality. It brings in increasing returns and some snowballing effects. However, some possibility of lock-in also exists.

Other aspects related to networking are as follows: ① The success of a new technology depends on adoption externalities. ② Key sectors are the providers of externalities through an array of untraded interdependencies and linkages. ③ Proximity is a necessary condition to take advantage of externalities generated by others. ④ Network firms are the result of attempts by firms to internalize the externalities.

4. Geographic Proximity and Clusters

Much importance is given in RIS to geographic proximity. There are many arguments and studies on this point. Generally, the distance matters. In the following, we summarize the findings of previous studies.

① For knowledge spillover, geographic proximity and spatial interaction is important (Jaffee 1989, Acs 2000 etc).

② Estimation of knowledge production function (Griliches 1990, Acs 2002) show that spillovers are facilitated by the geographic coincidence of universities and research laboratories in U.S. states.

③ Regional institutions – universities, research laboratories, specialized business services, related industries - and entrepreneurship are key ingredients in promoting regional growth (Acs 2002).

④ Local spillovers underline the importance of personal contacts and face to face communication in transferring scientific progress into jobs and products (Acs 2002).

⑤ In addition to university knowledge spillovers, other forces for localization are strong, such as development of specialized intermediate goods industries, economies of scale and scope, and network externalities (Acs , 2002).

⑥ Innovative activity is not evenly distributed in terms of regions (Acs 2002).

⑦ In network economies and in paradigmatic network industry, the market demand slopes upwards (due to demand externalities) and market supply schedule slopes downward (due to indivisibility) and supply externalities exist (David 1992, Acs, FitzRoy and Smith 1999).

⑧ Global value chain (GVC) as a form of network is important for RIS such as Nike system (Lim et al. 2003).

5. Universities and RIS

Universities in the region are at the center of RIS. In this concept, R&D for firms through university-industry cooperation in a region plays a very crucial role. Several empirical studies were conducted on this issue by Varga (1998) and Acs (2002) and the finding are as follows:

① Not every form of university knowledge transfer requires spatial proximity.

② However, in many cases, in the early stages, knowledge transfer between universities and high tech firms require spatial proximity.

③ Forms of knowledge transfer are information transmission in local personal network of university and industry professionals, or formal business relations. Sometime knowledge spillovers generated by industrial application of university physical facilities take place.

④ Spatial distribution of innovation and university research innovations exhibit a strong tendency to cluster spatially (Feldman, 1994). For example, among 50 US States, active States are only 11, including CA, NY, NJ, and MA. Moreover, innovative activities tend to concentrate in areas where academic research agglomerate.

⑤ The elasticity of innovation with respect to a given innovation research expenditure is 0.1 in the US metropolitan area.

⑥ The spillovers of university research on innovation extended over a range of 50 miles (80km), but not with respect to private R&D (Varga 2000).

⑦ Academic research has a positive local high technology employment

spillover at the city level (Acs 2002, p. 152).

⑧ The larger the geographical concentration of high-tech production, the more intensive the flow of information through personal networks including graduate students who get job in the region.

⑨ In order to get university research expenditure to work for the regional economy, a typical city, in the U.S. case, needs to have a size of 3 million, employment in high-tech production of around 160,000, and business service firms of around 4,000. However, some studies report that "… the critical creative and entrepreneurial aspects of innovation are dependent not on frontier research, doctoral graduates, gross expenditure, but on spillovers, linkages, networks, interdependencies synergies, etc" (Gibbons 1995). Moreover the intensity of the effect of local academic knowledge transfer on innovation depends on the development of RIS, including high-tech enterprises. For example, Johns Hopkins University is like an island in Baltimore city and has no linkage effect.

⑩ In the case of Pusan National University, firms having R&D relation with centers in the university showed a decrease in efficiency after cooperation (Lim 2006b). In the same study, neither firm size nor distance from the center had any effect on relative efficiency.

6. Industrial Homogeneity and RIS

There are two views of the relation between innovation and industrial homogeneity. The first view argues that externalities work within industries in line with the hypothesis of Marshall-Arrow-Romer (Acs 2002). The other view points to information spillovers between industry clusters (Jacobs 1969, Gleaser et al. 1992).

Acs (2002) finds that local university spillovers are very much specific to certain industries. For example, it was significant in electronics and instrument industry but insignificant in drugs and chemicals and machinery industries. The Korean case partially supports the above finding. Busan and surrounding areas are specialized in mechatronics, which is supported by university R&D in the region.

7. Innovation and Firm Size

This is an unresolved topic in industrial organization theory. The following

two opinions are of note. First, corporate R&D is a relatively more important source for generating innovation in large firms. By contrast, spillover from university research labs is more important in producing innovative activity in small firms.

An empirical study reports that elasticity of innovative activity with respect to geographical coincidence index is nearly four times greater for small firms than for large firms (Acs 2002). But more research is required to confirm this relationship. In a study surveying firms having R&D cooperation with Pusan National University, smaller firms with less than 30 employees tend to have benefits of cooperation (Lim 2006b). The same study reports that relation efficiency measured by DEA method is not directly related to scale and investment.

8. Venture Capital and Regional Innovation

Venture capital is a vital component of regional innovation and economic development, especially in the U.S. Venture capitalists not only support the development of new technologies but also shape their evolution (Florida, et al. 1999). However, venture capital resources are insufficient to generate regional innovation. In reality venture capital follows the innovative initiative. Venture capital needs the support of national systems of innovation (e.g. tax system). The role of venture capital in other countries besides the U.S. is not emphasized yet.

9. Learning and Learning Regions

Learning is one of the essential elements of RIS. Table 2 contrasts the learning regions with the traditional mass production regions. Becoming a learning region is a prerequisite of RIS. As RIS progresses a region becomes a learning region and vice versa.

Table 2: From mass production to learning regions

Basis of competitiveness	*Mass-production region*	*Learning region*
Production system	Comparative advantage based on : Natural resources Physical labor Mass production Physical labor as source of value Separation of innovation and Production	Sustainable advantage based on : Knowledge creation Continuous improvement Knowledge-based production Continuous creation Knowledge as source of value Synthesis of innovation and Production
Manufacturing infrastructure	Arm's-length supplier relations	Firm networks and supplier systems as sources of innovation
Human infrastructure	Low-skill, low cost labor Taylorist workforce Taylorist education and training	Knowledge workers Continuous improvement of human resources Continuous education and training
Physical and communication infrastructure	Domestically oriented physical Infrastructure	Globally oriented physical and communication infrastructure Electronic data exchange
Industrial governance system	Adversarial relationships Command and control Regulatory framework	Mutually dependent relationships Network organization Flexible regulatory framework

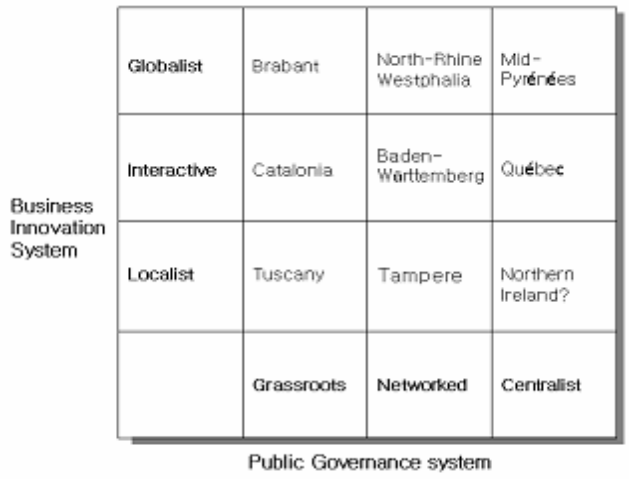
Source: Florida (2000)

Ⅴ. RIS in Advanced Countries

1. RIS in Europe

RIS has been generally implemented in advanced countries even though it is aimed at regional growth. The European Union has implemented RIS programs for many regions in Europe. Figure 2 analyzes the characteristics of regions along two dimensions, namely business innovation system (three types) and public governance system (three types). This model can be applied to regions outside Europe too. The identification of types may be different, but the two dimensional classification above can serve as a good reference to analyze RIS of other regions and countries.

Figure 2: Typology of RIS according to Braczyk et al. (1998)



2. RIS in the U.S.

In terms of the classification model of Figure 2, most regions of the U.S. may fall in the cell representing “grass roots” and “globalized” types. Two successful regions of the US are the Silicon Valley and Route 128 in Boston. However the patterns and characteristics of these two regions are quite different, as shown in Table 3. According to Saxenian (2000), Silicon Valley has a better environment than Boston in every respect.

Table 3: Silicon Valley and Route 128

	Silicon Valley	Route 128
Structure	Internationally competition based	Internal competition
Network approach	Network-based industrial system	Autarkic corporations
Work attitude	Laid-back	Button-down
Network vs System	Regional network system	Firm based system
Recoveries from recession	Resilient	Hard
Examples	Sun Microsystems, H-P	Apollo Computer, Digital Equipment

Source: Saxenian (2000)

One question that arises immediately is why a Silicon Valley doesn't happen in every country and every region. Is it possible and plausible? Actually almost all countries and regions have been trying to copy the Silicon Valley model. However these efforts have been unsuccessful, except in only a few cases. The closest to being like Silicon Valley may be the Shinju case (Kishimoto 2004). The question that arises next is what kind of alternatives can be found, if replication of Silicon Valley is not possible. Do we need a different model than Silicon Valley?

3. RIS in Japan

The terminology of RIS is not frequently used in Japan. Instead the term cluster has been more frequently used in the past as well as in the present. Table 4 shows the structure of Japanese innovation systems.

Table 4: Mechanisms used by Japanese firms for functional integration in innovation

Mechanism	Characteristics
Organizational intelligence	Technical, commercial and financial intelligence obtained through a variety of channels. This is processed and disseminated to various departments
Technology fusion	Fusing diverse technologies to obtain new, more innovative technologies
Concurrent engineering	Overlapping the phases of development to facilitate information exchange, performance feedback and technological improvements
Horizontal information flow structures	Job rotation, teams for new product development and technology assimilation, large trading houses
Corporate networking	Quick exchange of data, information, designs, and other knowledge
Technology forecasting	An integrated, long-term vision of technologies, competencies and markets
Organizational learning	In-house, on-the-job training, new product subsidiaries, learning by doing, learning by using, learning by selling

Source: Modified from Bowonder and Miyake (1993; 148; table1)

Two more characteristics of Japanese systems are as follows. The first is the systemic thinking facilitating hybrid technologies and technology fusion in a systemic manner. And the second is that sources of knowledge for innovation are various. Such sources include workers' accumulated knowledge, integration of technology within the firm, and networks of other firms, especially along the value chain.

However there are weaknesses in the Japanese system. Some of these are as follows:

① The universities are weak in comparison with corporate R&D labs.
② Unsuccessful technopolis policies in the past.
③ Unsuccessful decentralization of R&D function in Tokyo.
④ Flexible in adapting to new knowledge over time, but inflexible in relocating production system abroad.

Japan tried several regional policies, but these have not proved that successful so far. Recently a new cluster policy has emerged (Ishikura et al. 2003). This policy is based on Porter's cluster theory. Cities and regions are to be revitalized through innovation, which will lead to revitalization of Japan as a whole. Since Japan has a long history of manufacturing industry, the new system seems to be successful so far to a certain extent.

Ⅵ. RIS in Korea

1. Historical process of Development

As generally recognized, Korean economic development was led by government industrial policy (Amsden 1989). The central government tried various policies, such as intensive industrial policy, policy related to quantity and quality of education, science and technology policy and R&D, and establishment of Korea Institute of Technology, Korea Advanced Institute for Science and Technology, Korea Research Foundation, University specialization, etc. For regional development, examples of policies pursued include: balanced regional growth through redistribution of functions, growth pole policy aiming at spillover effect, establishment of science and technology parks, techno parks, regional research centers, engineering research centers, special research centers, national lab, and formation of clusters, such as Inchon-Songdo Digital Valley, Busan-Gyungnam Ulsan (Southeast) Valley, etc. The government has moved its policy toward innovation system. RIS is a natural consequence of these

movements. RIS has now become one of the national agendas pursued by the present government.

2. The Policy Target of the Korean Government

Among the targets of Korean regional policies are balanced regional development, regional innovation system through clustering and other means, transfer of administrative functions from Seoul to Chungcheung area, FDI and FEZ (Inchon, Busan, Gwangyang), and education system reform. All these are related to RIS directly and indirectly. Actually the government has established a national organization to handle the RIS policy.

3. Benchmarking Whom?

A consensus to adopt RIS as a regional development model seems to have been reached. The question is what kind of model for benchmarking is appropriate. Which model should Korea follow: Silicon Valley model, or one of the European success models, or the clustering model? What about a hybrid of European and Japanese model? A more fundamental question is whether valleys and clusters are a panacea for a nation and a region?

4. Is Korean and/or Busan Model Possible?

The continuing question is whether a Korean or a Busan regional model is possible. That is, what kind of modification or supplement is necessary for the Korean or regional case? Is it different from the existing models? In the case of Busan, the RIS system includes institutes and organization, such as RIS association and RIS study group, Asian Institute for Regional Innovation in Pusan National University, Southeast Cluster Project, Institute for Human Resource Development and Industrial and Science Parks, etc. However a regional (Busan) model has not been established yet.

5. A Search for a Busan Model

In order to build a Busan model, two comparisons are made in the following. The first one is a comparison among RIS in Europe, Korea and Busan (Table 5). The second one is a comparison among Busan, Singapore and California in terms of industrial characteristics and regional characteristics (Figure 3)

Table 5: Comparison between European and Korean RIS policies

	R&D subsidy	Funding of Univ.	Funding of RTOs	Sector based tech center	Encouraging research-industry interfaces	Innovation support	Cluster network	Public support
European Trend	Primarily at National level	primarily at national level	Mainly national level but regional input in empowered regions	Mix of regional and national support	Often at initiative of universities, sometimes with regional policy support	Mix of regional(EU) and national programmes	Either regional initiatives or no policy at all	Large variety in availability
Korean Trend	National level	National level or private	Mainly national	Mainly National	Mainly national	Both national and regional	Primarily national	Mainly national
Busan	Primarily at National level	National level or private	Mainly national	Mainly national	Mainly national	Both national and regional	Regional	Mainly national, Partially regional

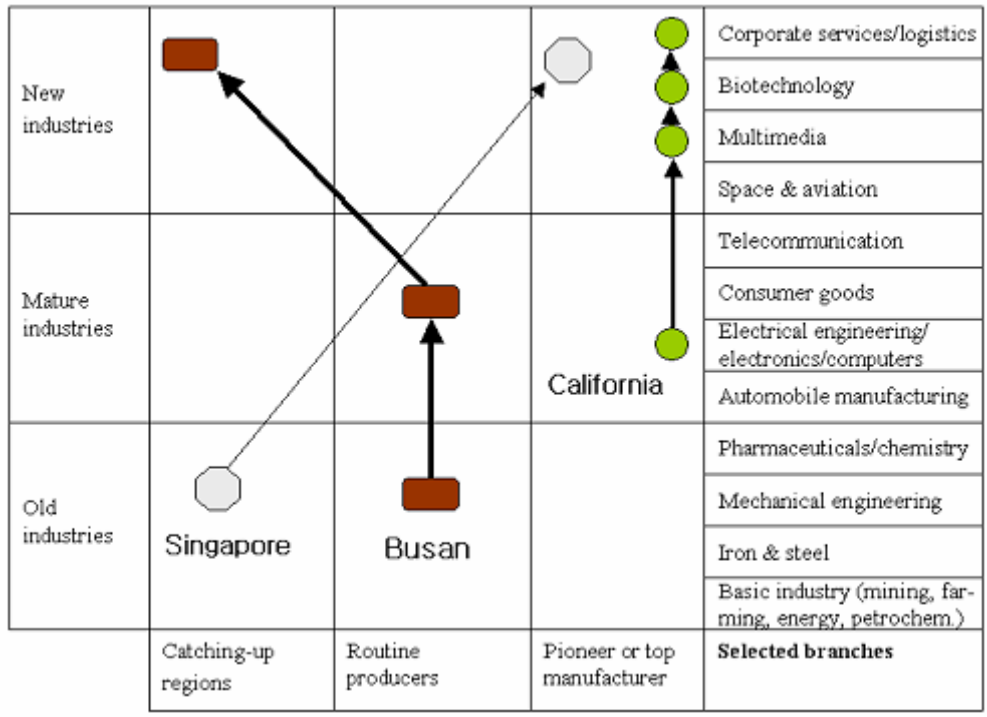
Compared with Europe, Korea has different characteristics in many respects. However a comparison among Singapore, California and Busan shows that each country or city has taken a different path of transformation, as shown in Figure 3. All three regions move toward new industries, but the direction of change is different. For example, Singapore jumped from old and traditional industries to pioneer manufacturing, but Busan moved into a mature industry and then tried to move to new industries as catching up regions. On the other hand, California (San Jose, San Francisco, San Diego, for example) has tried to move to new industries in the field of pioneer manufacturing.

VII. Policies for RIS: Lessons and Considerations

1. Three Levels of Policy in the Globalized Learning Economy

Lundvall and Borras (1977) suggest three levels of policies in the globalized learning economy. These are, first, policies affecting the pressure for change (competition policy, trade policy and the stance of general economic policy); second, policies affecting the capability to impose and absorb change (innovation policy and human resource development); and third, policies aiming at caring about losers in the game of change (social policies and transfer of income to weaker regions).

Figure 3: Regions characterized by industrial clusters paired with technological excellence



The problem with this classification is that the borderline between policies for innovation industrial policy, human resource development and education and training is not always clear cut. Moreover, these policies are essentially in the realm of NIS. More specific policies for RIS are required.

2. Key Public Tasks for NIS and RIS Policies

Cooke et al. (2000) list the following public tasks for NIS and RIS policies:

1) Providing R&D subsidies to (high-tech) firms;
2) Funding of universities;
3) Support for research and technology organizations;
4) Support for sector-based technology centers;
5) Encouraging research-industry interfaces;
6) Providing innovation services to SMEs;
7) Public support for risk capital and innovation financing;
8) Education and training;
9) Switch from centralized mindset to bottom up approach (Acs 2002); and

10) Attaching importance to high technology clusters (Acs 2002, p.152)

Other factors can also be considered, but these are good check points for policies in the Korean case too.

3. Questions for Policy Competence at Regional level

For a regional level, the following questions can be addressed to set up a regional policy, and they may also serve well in evaluating performance of regional policy.

1) Do policy-makers have a broad or narrow (technology or high-tech industry-oriented) view of innovation issues?
2) Do regional policy-makers interact with the business community, the science and technology community, and educational organizations?
3) Is innovation dealt with as an integrated policy area, or is it departmentalized?
4) Do the key decision-makers share a common view of the regional innovation strategy, or are initiatives developed in a haphazard fashion?
5) Do policy-makers help to set up interfaces between the publicly funded S&T organizations and industry?
6) Do the regional institutions have a sophisticated, mixed policy portfolio addressing the needs of local industry?

4. The Challenges for Regional Innovation Policy

On the basis of what we can find from the existing cases and research on RIS, the following six points may be listed for consideration (Acs 2000).

1) Facilitating the policy learning processes which looks internally (matching policies with regional needs) and externally (what can be learnt from best practices elsewhere?)
2) Encouraging local actors (research and technology suppliers and users) to improve their communication and understand each others' practices as a first step to further co-operation.
3) Finding the appropriate balance between building the future strategy on present strength and encouraging new technology markets to emerge in order to avoid lock-in effects.
4) Regional governments should develop policies that have the consensus of regional stake holders and address the needs of regional firms and at the same time they should not avoid difficult choices on behalf of the most efficient service and actions in order to avoid institutional lock-ins.

5) Innovation policies cannot directly assist the unemployed back into jobs or backward regions to develop; but in concert with other policies, such as skills training and infra investment (including soft, knowledge center investment) those policies could be useful.
6) The key for regions and their policy is to find the local and regional networks that link to global network and enhance their learning capacity, innovativeness, and competitiveness.

Another important question concerns the possibility of leap frogging for nations and regions. If such leap frogging is possible, many barriers to policies may be removed easily, and the weakness due to path dependency would be avoided. By adopting RIS in addition to NIS, a balanced regional development as well as economic growth could be possible.

VIII. Conclusion

This is basically a survey paper on RIS from the standpoint of Busan (region) and Korea (nation). Lessons and cases from other countries and regions should be acquired, and the need of a Korean and a Busan model of RIS is to be developed. Even though many projects have been taken up for implementing RIS, an established model comparable with other countries is not established yet. In addition, the technique or method to measure and evaluate the performance of RIS policies and practices should be developed. An exercise in this regard has been represented in the companion paper, Lim (2006). A conclusion to be made is that RIS is necessary as a means of regional development leading to a balanced national development at the same time. NIS is a prerequisite for a successful implementation of RIS. A model for a Korean region needs to be developed on the basis of existing data, and that model should be adopted as the regional policy.

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